

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Coopersville CAT 4 CPVM04BE

Biogas Engine

CHEVRON HDAX 6500 LFG GAS ENGINE OIL (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Moor

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

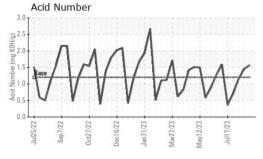
Fluid Condition

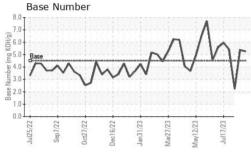
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

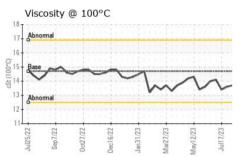
Machine Age hrs Client Info 74647 74431 74191 Oil Age hrs Client Info 853 637 397 Oil Changed Client Info Not Changd Not Changd Not Changd Sample Status method limit/base current history1 history2 Fuel WC Method 4-0 <1.0 <1.0 <1.0 Glycol WC Method NEG NEG NEG WEAR METALS method limil/base current history1 history2 Iron ppm ASTM D5185m >15 2 2 0 Mickel ppm ASTM D5185m >15 2 2 0 Nickel ppm ASTM D5185m >2 <1 0 <1 Titanium ppm ASTM D5185m >5 0 0 <1 Aluminum ppm ASTM D5185m >6 2 4 2 Lead ppm	GAS ENGINE OIL (GAL)	12022 Sep20	22 Oct2022 Dec2022	Jan2023 Mar2023 May2023	Jul2023	
Client Info	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Client Info	Sample Number		Client Info		WC0819475	WC0819450	WC0819456
Machine Age hrs	Sample Date		Client Info		23 Aug 2023	14 Aug 2023	04 Aug 2023
Oil Changed	Machine Age	hrs	Client Info		_		-
Oil Changed Client Info Not Changd NORMAL NORMAL NORMAL		hrs	Client Info		853	637	397
NORMAL NORMAL NORMAL CONTAMINATION method imilibase current history1 history2 history2	-		Client Info		Not Changd	Not Changd	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS	CONTAMINATIO	N	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >15 2 2 0 Chromium ppm ASTM D5185m >4 0 <1	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 0 <1 0 Nickel ppm ASTM D5185m >2 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>15	2	2	0
Description	Chromium	ppm	ASTM D5185m	>4	0	<1	0
Silver	Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Aluminum	Titanium	ppm	ASTM D5185m		0	0	0
Lead	Silver	ppm	ASTM D5185m	>5	0	0	<1
Copper ppm ASTM D5185m >14 3 1 3 Tin ppm ASTM D5185m >4 6 5 4 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	Aluminum	ppm	ASTM D5185m	>6	2	4	2
Tin	Lead	ppm	ASTM D5185m	>9	2	1	1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 1 <1 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 2 <1 2 Manganese ppm ASTM D5185m 2 <1 <1 Magnesium ppm ASTM D5185m 2049 2092 2109 Phosphorus ppm ASTM D5185m 289 301 292 Zinc ppm ASTM D5185m 378 375 374 Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20	Copper	ppm	ASTM D5185m	>14	3	1	3
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 <1 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 2 <1 2 Manganese ppm ASTM D5185m 10 15 11 Calcium ppm ASTM D5185m 2049 2092 2109 Phosphorus ppm ASTM D5185m 289 301 292 Zinc ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m >20 2 0 <1 INFRA-RED method limit/base	Tin	ppm	ASTM D5185m	>4	6	5	4
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 2 <1 2 Manganese ppm ASTM D5185m 10 15 11 Calcium ppm ASTM D5185m 2049 2092 2109 Phosphorus ppm ASTM D5185m 289 301 292 Zinc ppm ASTM D5185m 378 375 374 Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m >20 2 0 <1 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844 0.1 0.1 0 Nitration Abs/.1mm "ASTM D7415 >30	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 2 <1 2 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 10 15 11 Calcium ppm ASTM D5185m 2049 2092 2109 Phosphorus ppm ASTM D5185m 289 301 292 Zinc ppm ASTM D5185m 378 375 374 Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m >0 0 0 0 Potassium ppm ASTM D5185m >20 2 0 <1 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844	Boron	ppm	ASTM D5185m		0	<1	<1
Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 10 15 11 Calcium ppm ASTM D5185m 2049 2092 2109 Phosphorus ppm ASTM D5185m 289 301 292 Zinc ppm ASTM D5185m 378 375 374 Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m >20 2 0 <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 10 15 11 Calcium ppm ASTM D5185m 2049 2092 2109 Phosphorus ppm ASTM D5185m 289 301 292 Zinc ppm ASTM D5185m 378 375 374 Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m 0 0 0 0 Potassium ppm ASTM D5185m >20 2 0 <1	Molybdenum	ppm	ASTM D5185m		2	<1	2
Calcium ppm ASTM D5185m 2049 2092 2109 Phosphorus ppm ASTM D5185m 289 301 292 Zinc ppm ASTM D5185m 378 375 374 Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m >0 0 0 0 Potassium ppm ASTM D5185m >20 2 0 <1	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 289 301 292 Zinc ppm ASTM D5185m 378 375 374 Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m >20 2 0 0 Potassium ppm ASTM D5185m >20 2 0 <1 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 7.7 7.3 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.6 18.9 FLUID DEGRADATION method limit/base current history1 history2 <t< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>10</th><td>15</td><td>11</td></t<>	Magnesium	ppm	ASTM D5185m		10	15	11
Zinc ppm ASTM D5185m 378 375 374 Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m 0 0 0 0 Potassium ppm ASTM D5185m >20 2 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 7.7 7.3 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.6 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 16.	Calcium	ppm	ASTM D5185m		2049	2092	2109
Sulfur ppm ASTM D5185m 2231 2267 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m 0 0 0 0 Potassium ppm ASTM D5185m >20 2 0 <1	Phosphorus	ppm	ASTM D5185m		289	301	292
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m 0 0 0 0 Potassium ppm ASTM D5185m >20 2 0 <1	Zinc	ppm	ASTM D5185m		378	375	374
Silicon ppm ASTM D5185m >181 164 135 117 Sodium ppm ASTM D5185m 0 0 0 0 Potassium ppm ASTM D5185m >20 2 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 7.7 7.3 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.6 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 16.4 14.3 Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	Sulfur	ppm	ASTM D5185m		2231	2267	2054
Sodium ppm ASTM D5185m 0 0 0 Potassium ppm ASTM D5185m >20 2 0 <1 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 7.7 7.3 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.6 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 16.4 14.3 Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	CONTAMINANTS	;	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 7.7 7.3 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.6 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 16.4 14.3 Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	Silicon	ppm	ASTM D5185m	>181	164	135	117
INFRA-RED	Sodium	ppm	ASTM D5185m		0	0	0
Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 7.7 7.3 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.6 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 16.4 14.3 Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	Potassium	ppm	ASTM D5185m	>20	2	0	<1
Nitration Abs/cm *ASTM D7624 > 20 7.7 7.3 7.0 Sulfation Abs/.1mm *ASTM D7415 > 30 19.7 19.6 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 16.7 16.4 14.3 Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.6 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 16.4 14.3 Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	Soot %	%			0.1	0.1	0
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 16.4 14.3 Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	Nitration	Abs/cm	*ASTM D7624	>20	7.7	7.3	7.0
Oxidation Abs/.1mm *ASTM D7414 >25 16.7 16.4 14.3 Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.7	19.6	18.9
Acid Number (AN) mg KOH/g ASTM D8045 1.2 1.57 1.45 1.15	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.7	16.4	14.3
Base Number (BN) mg KOH/g ASTM D2896 4.5 5.26 5.37 2.23	Acid Number (AN)	mg KOH/g	ASTM D8045	1.2	1.57	1.45	1.15
	Page Number (PNI)	ma KOH/a	ASTM D2896	4.5	5.26	5.37	2.23



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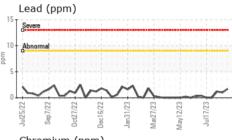


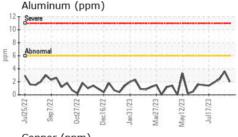


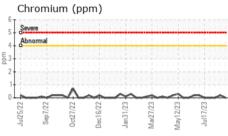
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

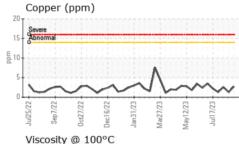
FLUID PROPER	TIES	method				history2
Visc @ 100°C	cSt	ASTM D445	14.7	14.0	14.0	13.7

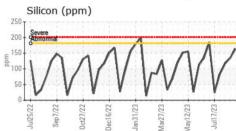
Severe					
Abnormal		/	1111111		
	Λ	\int	111111		
10	11	V	n		
V	~ *		V L	~	<u>^</u>
Jul25/22	0ct27/22	Jec16/22 Jan31/23	Mar27/23	May12/23	73

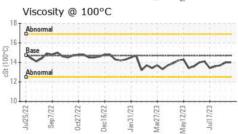


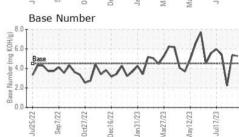
















Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : MOB 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0819475 : 05934950 : 10620221

Received Diagnosed Diagnostician

: 25 Aug 2023 : 28 Aug 2023 : Sean Felton

EDL NA Recips-Coopersville Coopersville Powerstation, 15362 68th Avenue

Coopersville, MI US 49404

Contact: Daniel Young daniel.young@edlenergy.com

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: EDLCOO [WUSCAR] 05934950 (Generated: 08/29/2023 17:55:12) Rev: 1

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